PSEUDOMICROCARA OLLIFFI (Blackb.). Fig. 3.

Blackburn, T., 1892, PROC. LINN. SOC. N.S.W., vi: 518 (*Helodes*).

Carter, H. J., 1935, *l.c.*, lx: 191 (*Elodes*).

Types.—Type in British Museum, cotypes in South Australian Museum.

Type locality.—Myponga, South Australia; cotypes Port Lincoln, South Australia.

Synonym: *Helodes olliffi* Blackburn, *loc. cit.*

NOTE.—This species is excluded from the genera *Elodes* and *Microcara* for the reasons given under *Pseudomicrocara cincta* (Blackb.). It resembles *P. orientalis*, n. sp., and less closely *P. occidentalis*, n. sp., from both of which it is readily distinguished by the third antennal joint being not at all shorter or perhaps slightly longer than the fourth. *Mesosternal cavity* triangular, as long as wide.

Distribution.—New Holland (Edwards); South Australia: Myponga (Blackburn and Elston), Port Lincoln (Blackburn Coll.); Victoria: Vic. Alps, Inglewood; N.S.W.: Sydney (Bryant Coll.).

PSEUDOMICROCARA ATKINSONI (Waterh.).

Waterhouse, C. O., 1877, *Ent. Mo. Mag.*, xiv: 27 (*Helodes*).

Type in British Museum.

Type locality.—Tasmania.

Synonym: *Helodes atkinsoni* Waterh., *loc. cit.*

Original Description.—Oblongus, piceus, griseo-pubescens; thorace fere semi-circulari, basi late bi-emarginato, elytris haud lineatis. Long. 3 lin., lat. 1¾ lin.

General form of *H. lividus*, but with the thorax nearly semicircular, a little narrower than the elytra, broadest at the posterior angles which (although their extreme point is a little blunted) are a little less than right angles, the lateral margins are a little impressed, the base is broadly but not deeply bi-emarginate, the two emarginations occupying the whole base. The scutellum is a trifle longer than in *H. lividus*, not raised in the middle, extremely closely and rather finely punctured. The elytra have no traces of raised lines. The head is very closely and finely granulate-punctate; the three basal joints of the antennae are pitchy, the rest nearly black. The punctation of the thorax is extremely close and very fine, that on the disc of the elytra is less close and less fine, and quite distinct, that on the sides is much finer and more close, especially posteriorly, where it becomes less distinct. The epipleural fold of the elytra is at right angles with the side of the elytra, slightly concave at the base, finely and rather thickly punctured.

Discussion.

Some twenty specimens of this species examined include one compared with type by G. J. Arrow. In addition to the details given in the description, the following may be useful: *Antennae*: Second joint small, moniliform, third longer than second, but considerably shorter than fourth, which is about equal to the two preceding combined, remainder approximately equal. *Mesosternal cavity* longer than wide, rounded at apex.

Distinguishing Characters.—It is distinguished from *P. olliffi* (Blackb.) by the third antennal joint being distinctly shorter than fourth, etc., and from *P. orientalis* and *P. occidentalis*, n. spp., by the complete absence of raised lines on the elytra and rather more regularly elongate-ovate and convex form and by the shape of the mesosternal cavity.

Distribution.—Tasmania: Franklin, Huon R. (J.J.W.); Victoria: Baxter (Dixon), Moorooduc (Dixon).

PSEUDOMICROCARA ORIENTALIS, n. sp. Figs. 5, 7, 10.

Types.—Holotype in Coll. Armstrong, paratypes in British, National and Queensland Museums and Coll. Brooks.

Type locality.—Gloucester, N.S.W.

Elongate-ovate, moderately shining, depressed, brown (some specimens lighter with pronotum infuscated), three basal joints of antennae and other appendages paler,

remaining antennal joints sometimes narrowly paler at apices, clothed with fine short depressed pubescence.

Head finely and closely punctate, invisible from above when retracted, bi-impressed between eyes; eyes rather large and prominent. *Antennae*: First joint large globular, second small moniliform, third twice as long as second and expanding towards apex, fourth about twice as long as third, remainder similar to fourth but becoming progressively slightly shorter. *Labial palpi*: Third joint long, thin, cylindrical, arising from a little to one side of apex of second and at rather less than right angles to it, resembling the maxillary palpi.

Pronotum a little more than one and a half times as wide as long, almost semicircular in outline, base slightly bisinuate, sides and apex explanate, finely and closely punctate. *Scutellum* triangular, finely punctate. *Elytra* four times as long and not quite one and a half times as wide as prothorax, not quite half as wide as long, sides subparallel for about half length, less finely and very closely punctate with three slightly elevated costae on each. *Mesosternal cavity* broadly subtriangular, twice as wide as long, apex rounded.

Size: 7·75–5·5 × 3–2·75 mm.

Distribution.—N.S.W.: Gosford (H. J. Carter), Gloucester (H. J. Davidson and J. Armstrong), Comboyne and Hastings R. (H. J. Davidson), Woy Woy (Nicholson), Richmond, Tenterfield (Brooks); Queensland: Brisbane and National Park (H. Hacker); Victoria: Baxter and Bendigo; Tasmania: Huon R. (Lea).

Discussion.

Thirty-two specimens examined all appear to belong to this species, which has often been identified as *Elodes olliffi* Blackb. or *E.* (*Cyphon*) *australis* (Er.). It is at once distinguished from the former by the third antennal joint being distinctly shorter than the fourth and the pronotum less convex and the anterior "angles" thereof less depressed. From the latter it differs in its larger pronotum, which is wider in relation to the elytra, conspicuously shorter legs, less noticeably raised elytral costae, etc.

PSEUDOMICROCARA OCCIDENTALIS, n. sp.

Types.—Holotype and paratypes in the British Museum (B.M. 136–28), paratypes in Coll. Armstrong and the National Museum.

Type locality.—Yanchep, Western Australia.

Elongate-ovate, moderately shining, fusco-castaneous, disc of pronotum darker, head variably infuscated, first three joints of antennae flavo-testaceous, the others with apices pale, clothed with very fine short depressed pubescence.

Head finely and closely punctate; eyes rather large. *Pronotum* twice as wide as long, almost semicircular in outline, base slightly bisinuate, sides explanate, finely and closely punctate. *Scutellum* triangular, finely punctate. *Elytra* four times as long as the prothorax and half as wide again, two-thirds as wide as long, rather coarsely and not quite so closely punctate as pronotum, with three very faint costae on each. *Antennae* as in *P. orientalis*, n. sp. *Mesosternal cavity* broadly triangular.

Size: 7–5·5 × 3·5–3 mm.

Distribution.—W.A.: Yanchep, 32 m. N. of Perth (H. E. Turner, Nov.-Dec., 1935), S.W.A.

Distinguishing Characters.—The eleven specimens examined differ from *P. olliffi* (Blackb.), *inter alia*, in the following respects: third joint of antennae shorter, form less parallel, pronotum not as convex, with anterior angles more or less depressed, elytra more coarsely punctate, colour of antennae (3rd–11th joints uniformly brown in *P. olliffi*). The species is very close to *P. orientalis*, n. sp., of which it is evidently the western counterpart, but is slightly broader with the elytral punctures decidedly coarser and the eyes not so prominent.

PSEUDOMICROCARA DIXONI, n. sp.

Types.—Holotype in National Museum, paratype in Coll. Armstrong.

Type locality.—Baxter, Victoria.

Elongate-ovate, moderately convex, flavo-testaceous, clothed with fine moderately long pale pubescence, antennal joints 4 to 11 darker except for apices.

Head very closely and finely punctate. *Pronotum* approximately semicircular as seen from above, slightly more than twice as wide as long, closely punctate, base lightly bisinuate, posterior angles slightly less than right angles, sides narrowly margined. *Scutellum* sub-triangular, as long as wide, punctured as pronotum. *Elytra* three-fifths as wide as long, as wide at base as prothorax, slightly widened to shoulders then parallel to apical third whence evenly rounded to apex, narrowly margined without any trace of costae, much more strongly but less closely punctate than pronotum, with an impunctate area on each elytron behind middle, punctures becoming finer and closer towards sides, with a faint subsutural stria. *Antennae* moderately long, first joint stout, second and third short, combined length slightly less than fourth, third slightly longer than second, remainder approximately equal.

Size: 5·5–5 × 2·8–2·6 mm.

Distinguishing Characters.—Two specimens examined are very close to *P. atkinsoni* (Waterh.), which occurs in the same locality, but that species differs in its comparatively uniformly close fine elytral punctures. It is also somewhat darker.

PSEUDOMICROCARA INFUSCATA, n. sp.

Types.—Holotype and paratype in Australian Museum, paratypes in Macleay Museum and the author's collection.

Type locality.—King George's Sound, W.A. (Macleay coll.).

Elongate-ovate, rather convex, shining, brownish more or less infuscated, head and underside darker, legs not infuscated, 4–11th antennal joints infuscated.

Head rather finely and closely punctate. *Antennae*: Third joint small, less than half length of fourth. *Pronotum* one and four-fifths as wide as long, finely and not closely punctate, basal angles rounded. *Scutellum* large triangular, about as wide as long, finely and closely punctate. *Elytra* three and a half times as long as pronotum, one and a half times as long as wide, sides slightly curved, expanding to about middle, apex rounded, coarsely and closely punctate, not costate. *Mesosternal cavity* not examined.

Size: 3·75–3 × 2–1·5 mm.

Distinguishing Characters.—Six specimens examined are allied to *P. atkinsoni* (Waterh.) and *dixoni*, n. sp., but are much smaller with coarser elytral punctures and these not showing the irregularity of the latter.

PSEUDOMICROCARA VARIABILIS, n. sp. Fig. 8.

Types.—Holotype in the British Museum, paratypes in the National and Queensland Museums, Tasmanian Dept. of Agriculture and the author's colls.

Type locality.—Hobart, Tasmania (91–88).

Elongate-ovate, rather convex, nitid, colour variable, but mostly with the medial area of the pronotum piceous and the sides flavo-testaceous, head piceous, elytra piceous to light brown but suture usually dark, underside piceous to dark brown, femora, antennae and maxillary palpi dark, tibiae, tarsi, mandibles and labial palpi paler.

Head closely and finely punctate, punctures finer than eye facets. *Antennae*: Second joint moniliform, third smaller than second, together as long as fourth, fourth-eleventh of equal length. *Pronotum* from above approximately semicircular, posterior angles obtuse, anterior "angles" not depressed, more finely and less closely punctate. *Scutellum* subtriangular, elongate, sides lightly rounded, punctures closer and a little coarser than on pronotum. *Elytra* four times as long as prothorax, not quite half as wide again, twice as long as wide, rather coarsely and closely punctate, the punctures tending to cause transverse wrinkling. *Mesosternal cavity* transversely triangular.

Size: 3·8–3 × 2–1·8 mm.

Distinguishing Characters.—There are 28 specimens of this variably coloured species under examination. Typical specimens are readily distinguished by the pale lateral margins of the pronotum. It is smaller than *P. atkinsoni* (Waterh.) and has a very different mesosternal cavity.

Distribution.—Tasmania: Hobart (J. J. Walker), Cradle Mt. (Carter, Lea, Turner), Mt. Wellington (Lea), Launceston (Lea).

NOTE.—Since the above was written the author took a long series of this species on flowers at various localities in Western Tasmania and at Cradle Mt. during January, 1949. It appeared to be the most abundant species of this family in that State.

PSEUDOMICROCARA MINOR, n. sp.

Type, unique, in Australian Museum.

Type locality.—Mt. Lofty Ranges, S.A. (A. H. Elston).

Elongate, gently convex, shining, stramineous, head, scutellum, antennae, and palpi brown, finely pubescent.

Head finely and closely punctate; eyes large. *Antennae* much as in *P. orientalis*, but of uniform thickness to apex, joints two and three together as long as four. *Pronotum* not quite twice as wide as long, subobsoletely punctate, anterior "angles" not strongly depressed. *Scutellum* triangular, as long as wide, finely and not very closely punctate. *Elytra* nearly four times as long as pronotum, one and four-fifths as long as wide, sides subparallel, apex less rounded than usual, coarsely and rather closely punctate, very faintly costate. *Underside* not examined.

Size: 3·25 × 1·5 mm.

Distinguishing Characters.—Close to *P. occidentalis*, n. sp., but that species, besides being larger, has the pronotum definitely punctate and the antennae becoming a little more slender towards apex.

PSEUDOMICROCARA ELSTONI, n. sp. Fig. 6.

Types.—Holotype in Australian Museum, paratype in the author's coll.

Type locality.—Melrose, South Australia (A. H. Elston).

Elongate-ovate, gently convex, shining, luteo-testaceous, antennae and palpi brownish, head infuscated at base and sides, finely pubescent.

Head finely and closely punctate. *Antennae* much as in *P. orientalis*, n. sp., rather long, decreasing in width. *Pronotum* twice as wide as long, basal "angles" but little depressed, very finely and rather closely punctate. *Scutellum* triangular, as long as wide. *Elytra* about four and two-thirds as long as pronotum, twice as long as wide, sides parallel, apex rounded, moderately and closely punctate, each feebly tricostate, suture slightly raised. *Mesosternal cavity* triangular, as wide as long.

Size: 5–4·5 × 2·1–2 mm.

Distinguishing Characters.—Two examples examined represent a species close to *P. occidentalis*, n. sp., but smaller, narrower, antennae a little longer and more slender, pronotum not so explanate, mesosternal cavity more sharply pointed, etc. It is larger than *P. minor*, n. sp., differently sculptured and with noticeably different antennae. The elytra are proportionately longer than in *P. infuscata*, n. sp.

PSEUDOMICROCARA ELONGATA, n. sp.

Type.—Holotype and paratype in author's coll., paratype in Australian Museum.

Type locality.—Hazelbrook, N.S.W.

Elongate, rather convex, shining, castaneous, finely pubescent.

Head large, finely and closely punctate. *Antennae*: Third joint small, fourth about one and a half times as long as third. *Pronotum* slightly more than twice as wide as long, the sides depressed, disc convex, posterior angles rounded, anterior angles strongly so, finely and fairly closely punctate. *Scutellum* convex, subtriangular, finely and closely punctate. *Elytra* a little wider than and five and a half times length of pronotum, nearly twice as long as wide, sides slightly widening, apex rounded, rather coarsely

punctate, each faintly tricostate. *Mesosternal cavity*: sides converging, about as long as wide, apex rounded.

Distinguishing Characters.—Three specimens examined represent a species very distinct from the others placed in this genus by their narrow, elongate, subcylindrical form, with a certain resemblance to an elongate Anobid when the head is withdrawn.

Distribution.—N.S.W.: Hazelbrook (the author), Blue Mts. (K. K. Spence i.33).

PSEUDOMICROCARA SPENCEI, n. sp.

Type, unique, in Australian Museum.

Type locality.—Megalong, Blue Mts., N.S.W. (K. K. Spence xii.34).

Elongate-ovate, moderately convex, shining, castaneous-brown tending to piceous on disc of elytra and pronotum, clothed with fine short depressed pubescence.

Head finely and contiguously punctate, impressions between the eyes obsolete. *Antennae*: Second and third joints very small, submoniliform, fourth about three times as long as third. *Pronotum* finely and closely granulate punctate, convex, about one and two-thirds times as wide as long, basal angles but little rounded. *Scutellum* triangular, as long as wide, finely and very closely punctate. *Elytra* a little less than four times length of pronotum, a little less than twice as long as wide, sides lightly curved, disc very slightly depressed at basal fourth, suture very slightly raised, very closely and rather more coarsely punctate, tending to be wrinkled, each inconspicuously tricostate. *Mesosternal cavity* U-shaped, slightly more than twice as long as wide.

Size: 8·5 × 4 mm.

Distinguishing Characters.—A large species resembling an overgrown *P. orientalis*, n. sp., but differing in most details; not apparently close to any other known species.

PSEUDOMICROCARA PICTA, n. sp.

Types.—Holotype in National Museum, paratypes in the National Museum, Victorian Dept. of Agriculture, and the author's coll.

Type locality.—Baxter, Victoria (J. E. Dixon).

Elongate-ovate, moderately convex, shining, dark brown, pronotum and elytra testaceous, the former with disc more or less infuscated (almost entirely brown in one example), the latter with the suture, base and part of the anterior lateral margin narrowly piceous, and the following piceous markings: two elongate dark maculae on each at basal third, an irregular zig-zag fascia at apical third and a more or less extensive spot before the apex of each; mouth parts, tibiae, tarsi and basal joints of antennae testaceous, clothed with fine pubescence much the colour of the underlying derm.

Head closely punctate, punctures about as coarse as eye-facets. *Antennae*: Third joint shorter than fourth (cannot see clearly). *Pronotum* approximately semicircular in outline, base slightly bisinuate, basal angles acute, more finely and much less closely punctate than head. *Scutellum* triangular, finely and more closely punctate. *Elytra* a little wider than pronotum and about three times as long, two-thirds as wide as long, much more coarsely and closely punctate than pronotum, costae barely discernible. *Mesosternal cavity* a little longer than wide, sides converging, apex rounded.

Size: 4–3·25 × 1·9–1·75 mm.

Distinguishing Characters.—Eight specimens examined all from the same locality are readily distinguished by their narrow form in combination with the marked elytral pattern. The pattern, however, may vary in the case of more widely collected material.

PSEUDOMICROCARA MACULIVENTRIS, n. sp.

Types.—Holotype in the author's coll., paratype in Macleay Museum.

Type locality.—Moe, Victoria (C. Gooding).

Elongate-ovate, but little convex, light brown, more or less infuscated on head, pronotum, elytra, ventral surface, antennal joints after the third and femora, clothed with very short fine pubescence.

Head finely and rugosely punctate with two infuscated foveate depressions between eyes, infuscation of base of head enclosing a subtriangular area with apex rearwards and attenuated angles. *Antennae*: Third joint shorter than second, these, combined, slightly more than half length of fourth. *Pronotum* a little less than twice as wide as long, widest at basal third, hind angles strongly rounded, sides widely explanate and somewhat reflexed, finely and contiguously punctate. *Scutellum* subtriangular, as wide as long, punctured as pronotum, not infuscated. *Elytra* four times as long as pronotum, twice as wide as long, sides subparallel, more coarsely but still contiguously punctate, each with four distinct costae, infuscation occupying most space between these, encroaching but little on the margins and raised suture. *Mesosternal cavity* small subtriangular (cannot see well with available material). *Abdomen* with ten dark foveate spots, one on each side of each segment, also two (not foveate) near the centre of the second, third and fourth segments.

Size: 8·5 × 4 mm.

Distinguishing Characters.—Two specimens examined belong to a large species perhaps closest to *P. variegata* (Carter), but the reflexed pronotal margins alone separate it from this.

Note.—The second specimen from Victoria in the Macleay Museum is much less infuscated, so that the elytra may be regarded as spotted.

Pseudomicrocara anobioides, n. sp.*

Types.—Holotype in Queensland Museum, paratypes in Queensland Museum and the author's coll.

Type locality.—Brisbane, Queensland (H. Hacker, 3.10.26).

Elongate-ovate, rather convex, nitid, brown, somewhat more infuscated on pronotum, a tendency to faint mottling on the elytra, head, antennae (except basal joints) and meso-metasternal region dark; pubescence pale, rather dense, short, fine with a tendency to form a darker zig-zag fascia behind middle of elytra.

Head closely and rugosely punctate. *Pronotum* approximately semicircular in outline, base bisinuate, widely lobed in middle, basal angles rounded, anterior widely rounded depressed, disc depressed before scutellum, sides of depression emphasized by arrangement of pubescence so as to appear as two tubercles, finely and closely granulate-punctate. *Scutellum* triangular, slightly wider than long, finely and closely granulate-punctate. *Elytra* a little wider than prothorax and three times as long, approximately one and a third times as long as wide, a little depressed at basal third, closely and finely granulate-punctate costae scarcely discernible. *Antennae* a little stouter than usual, second joint ovate, third smaller, obliquely truncate, about a third length of fourth, this longer than fifth *et seq.* and about as long as eleventh. *Mesosternal cavity* semicircular.

Size: 3–3·5 × 1·6–1·75 mm.

Var.—Four specimens from Brisbane are piceous with legs infuscated.

Discussion.

Sixteen specimens, under examination, may be compared with *P. picta*, n. sp., and *P. elongata*, n. sp., from both of which they may be distinguished by their more closely and evenly (granulate) punctate upper surface and the bituberculate appearance of the base of the pronotum. Superficially the species resembles some of the less compact Anobiids.

Distribution.—Queensland: Brisbane (H. Hacker, 3.10.26, 9.9.12, 18.9.11), Stradbroke I. (H. Hacker, 17.9.15), Sunnybank (H. Pottenger, 7.9.46).

Note.—Seven specimens from Caloundra, also in the Queensland Museum, seem to represent a smaller paler variety of this species.

* This species was described subsequently to the compilation of the Key to Species.

HETEROCYPHON, n. gen. Helodinae.

Genotype, *Heterocyphon* (*Cyphon*) *australis* (Er.). Figs. 4, 12.

Form rather elongate, facies of *Veronatus*.

Head covered by prothorax when withdrawn, without marked antennal fossae beneath eyes, front convex, produced in a short muzzle; eyes not very prominent. *Labrum*: Apex slightly rounded, sides strongly so, narrowed to base, separated from frons by a rather wide membranous area. *Mandibles* slender, sharply pointed, but little exposed, with an acute tooth on each, points protruding laterally. *Antennae* filiform, slender, about half length of body, second joint moniliform, small, third shorter than remainder. *Maxillary palpi* not very slender, terminal joint acuminate and shorter than penultimate. *Labial palpi*: Terminal joints slender, arising from end of penultimate.

Prothorax small, approximately semicircular in outline as seen from above, in fact subtruncate, base bisinuate, with a small depressed area on the basal margin near the deepest part of each situation, posterior angles rounded, anterior widely so. *Elytra* about five times length of pronotum and considerably wider, basal margin strongly depressed behind shoulders to permit the anterior angles of the pronotum to overlap the elytra when these are fully expanded. *Prosternum* excessively reduced, prosternal process diamond-shaped, not continuing visibly between coxae. *Coxae*: Middle separated, not transverse; posterior strongly contiguous, plates wide, more strongly oblique from the transverse than in *Pseudomicrocara*. Legs long, slender; hind tarsi slender, first joint long, second about half that of first, third about half that of second, fourth bilobed.

Distinguishing Characters.—This genus differs from *Microcara* and *Helodes* in the same way as *Pseudomicrocara* except that the shape of the middle and hind coxae is somewhat intermediate. From *Pseudomicrocara* it differs by the differently shaped pronotum, longer, looser form, longer legs, and less strongly transverse arrangement of the middle and hind coxae, and toothed mandibles. *Veronatus* has a strongly emarginate labrum.

HETEROCYPHON AUSTRALIS (Er.). Figs. 4, 12.

Erichson, W. F., 1842, *Arch. Naturgesch.*, viii: 144 (*Cyphon*).

Types.—Location unknown to the author.

Type locality.—Tasmania.

Synonyms: *Cyphon australis* Er., *loc. cit.* *Cyphon australis*, Guér., 1843, *Spec. et Icon.* fasc. 3, nr. 9, p. 15. *Elodes australis*, Cart., 1935, PROC. LINN. SOC. N.S.W., lx: 191.

Original Description.—"42. *Cyphon australis*: *Oblongus*, obscure testaceus, griseo-pubescens, elytris obsolete 3-liniatis. Long. 2½ lin.

"Oblongus, C. livido sesqui longior licet eiusdem latitudinis, saturate testaceus, thoracis disco corporique infra fuscocentibus, cello humerali dilutiore, totus dense pube grisea cericante vestitutis. Antennae fuscae, articulis singularis apice testaceus. Caput confertissime subtiliter punctatum. Thorax parvus, coleopterus angustior, latitudine duplo brevior, lateribus et apice rotundatus, basi prope medium utrinque emarginatus, angulis posterioribus obtusiusculis, confertissime punctatus, disco pone medium utrinque leviter impressus, margine laterali reflexo. Scutellum confertissime punctatum, disco elevato. Elytra dense subtiliter punctata, oblique inspecta liniis tribus elevatis obsoletissimis. Femora medio fuscesunt."

Two specimens in the Queensland Museum (with the place label Strahan Tas., 25.1.34, A. J. Turner) agree better with the above description than do those herein described as *Pseudomicrocara orientalis*, some of which were regarded by Carter as belonging to Erichson's species. *P. orientalis* does not have the narrow reflexed lateral margin to the pronotum, the disc of the scutellum is not noticeably raised, the antennal joints, if at all, are only very slightly testaceous at the apex and the base of the pronotum gives no hint of emargination. This latter character does not strictly apply to the Strahan specimens either, but a suddenly depressed area on each side of basal lobe gives the appearance of emargination. It seems as if the elytra when expanded lock with the hind margin of the pronotum, which is truly remarkable.

Additional Descriptive Details.—Head: Punctures somewhat granulate. Two foveate impressions between eyes. *Antennae*: Second joint moniliform, third slender, about twice as long as second, shorter than fourth. *Mesosternal cavity* longer than wide, sides slightly converging, apex rounded and produced in a short carina.

HETEROCYPHON MACEDONENSIS, n. sp.

Type.—In collection Victorian Dept. Agriculture.

Type locality.—Mt. Macedon, Victoria.

Elongate-ovate, not very convex, nitid, dark castaneous, head and scutellum brighter, legs and antennae dull testaceous, antennal joints lighter towards apex, clothed with very fine and short pubescence.

Head finely rugose with a short medial carina and a sinuate elevation running from near each eye towards but not meeting the base of this carina, front somewhat flattened, three indefinite depressions at base. *Antennae* nearly half length of body, slender, first joint rather large, second and third very small moniliform, the latter obliquely truncate, together shorter than fourth, remainder elongate, but eleventh elongate-ovate. *Pronotum* one and three-quarter times as wide as long, sides and apex lightly rounded, base rather strongly bisinuate, posterior angles rounded, overlapping elytra, anterior widely rounded, sides explanate, apex less so, disc transversely depressed at middle behind which a medial thickly Y-shaped elevation stands between two basal reniform ones, very finely and closely punctate. *Scutellum* subtriangular, convex, almost impunctate. *Elytra* about twice as wide as pronotum, two and a half times as long as wide, sides subparallel, apex and shoulders rounded, basal depressions not as marked as in *H. australis* (Er.), more coarsely than on pronotum, but still closely and finely punctate, each with three distinct, and one shorter less distinct, costae. *Mesosternal cavity* very slightly transverse, almost quadrate, apex slightly rounded, apical angles rounded.

Size: 8 × 4 mm.

Distinguishing Characters.—The unique specimen is at once distinguished from *H. australis* (Er.) by its shorter clothing, differently-shaped mesosternal cavity and shorter third antennal joint, etc.

NOTE.—Since the above was written an additional eleven specimens have come before me. Each mandible has a small tooth.

Distribution.—Victoria: Mt. Macedon, Olinda Creek (Dixon, 17/6/15), Belgrave (F. E. Wilson, Jan., 1937).

MACROCYPHON Pic.

Mel. exot.-ent., 29, 1918: 14.

The species described hereunder exhibits the following characters in common with *M. elongatum* Pic, *incostatum* Pic and *minor* Pic, specimens of which are before me:

Form elongate. *Head* convex, eyes rather small. *Labrum* small, short, slightly emarginate, exposing much of the mandibles. *Mandibles* not long or greatly crossed. *Labial palpi* simple. *Antennae* filiform, joints after second elongate. *Prothorax* narrowed towards base and apex, this bisinuate but more strongly so than in Pic's species, and rather wider. *Prosternal process* large, broadly spatulate, rather widely separating front coxae. *Middle coxae* separated. *Elytra* elongate, parallel-sided but not at all gibbose at base or transversely impressed as in Pic's three species examined.

MACROCYPHON SPENCEI, n. sp.

Types.—Holotype and paratype in author's coll., paratype (headless) in Macleay Museum.

Type locality.—Central eastern N.S.W. (K. K. Spence).

Elongate, moderately convex, shining, fusco-castaneous, clothed with short, recumbent, pale pubescence.

Head large, convex, a little flattened between eyes, closely and finely punctate. *Pronotum* twice as wide as long, sides explanate, sinuate, constricted to base and apex, this strongly bisinuate, base slightly arcuate, posterior angles obtuse, not rounded,

anterior broadly produced, rounded, disc longitudinally subcanaliculate, finely and not so closely punctate. *Scutellum* cordate, depressed before apex, finely and closely punctate. *Elytra* about four and a half times as long as pronotum and wider than it, twice as long as wide, perpendicular at sides, these parallel for greater part of length, apex rounded, closely, more or less confluently and more coarsely punctate, each distinctly tricostate. *Mesosternal cavity* broadly rounded.

Size: 10–8 × 4–3·5 mm.

Distinguishing Characters.—Differs from *M. pendleburyi* Pic (according to the description) by the pronotum being punctate, not granulose, and the elytra not arcuately impressed, and from the three species mentioned above in many respects.

MACRODASCILLUS Cart.

PROC. LINN. SOC. N.S.W., lx, 1935: 187.

Genotype, *M. denticornis* Cart.

Discussion.

This genus belongs to the Helodinae and has no relation to *Dascillocyphon* Everts. It differs from *Prionocyphon* Redt. by its simple labial palpi. It is very close to *Byrrhopsis* Shp. (= *Byrrhodes* Shp.) from New Zealand, but in that genus the eyes are less prominent, the antennae more slender and not at all serrate. *Labrum* emarginate at apex, subcordate, separated from frons by a fairly wide membranous area.

MACRODASCILLUS DENTICORNIS Cart. Fig. 11.

Loc. cit., 187, f. 3.

Type in National Museum.

Type locality.—Barrington Tops, N.S.W.

NOTE.—Type examined.

MACRODASCILLUS SCALARIS (Lea).

Loc. cit., 1895: 230 (*Helodes*).

Types.—Holotype and two cotypes in South Australian Museum.

Type locality.—Galston, N.S.W.

Synonymy: *Helodes scalaris* Lea, *loc. cit.* *Elodes scalaris*, Carter, *loc. cit.*, lx, 1935: 191.

Discussion.

Types examined. This species has all the characters of *Macrodascillus*. It resembles *M. denticornis* Cart., but differs in its head being wider between eyes, its darker colour and coarser punctures, more convex shape, antennal joints rather longer and more parallel sided in female. It is evident that Carter had not fully understood the species as a specimen from Kuranda in the National Museum is labelled by him "near *Macrohelodes princeps* Blackb.", and others not belonging to the same genus in the Wilson collection are labelled as "*Helodes scalaris*". *Pronotum* twice as wide as long.

Distribution.—N.S.W.: Galston (Lea); Victoria: Toolangi (F. E. Wilson, 3/4/42); Queensland: Kuranda (Dodd).

PENEVERONATUS, n. gen. Helodinae. Fig. 13.

Genotype, *Peneveronatus australis*, n. sp.

Form rather elongate, rather depressed, facies of *Veronatus*.

Head, when withdrawn, covered by prothorax, with marked grooves or fossae beneath eyes for reception of antennae, front almost flat and produced in a short muzzle below insertion of antennae. *Eyes* moderately prominent. *Labrum*: Sides and apex rounded, the latter slightly emarginate, very slightly narrowed at base, separated from the frons by a narrow membranous area. *Mandibles* slender, sharply pointed, with a small tooth placed well back, prominently exposed. *Antennae* filiform, slender, about half length of body; first joint rather large, second small moniliform, third very short and obliquely truncate, remainder elongate.

Maxillary palpi not slender, terminal joint acuminate and a little shorter than penultimate (Fig. 13, *a*). *Labial palpi*: Penultimate joint subtriangular and broad at

apex, terminal slender, cylindrical, slightly bent, arising from the inner half of apex of penultimate (Fig. 13, *b*). *Prothorax* small, approximately semicircular as seen from above, rather depressed, base bisinuate, sides and to a less extent apex explanate, disc with a short sulcus at either side of basal lobe. *Elytra* about five times length of prothorax and considerably wider. *Legs* long, slender; hind tarsi slender, first joint twice length of second, second twice that of third, fourth bilobed. *Prosternum* very narrow in front of coxae; prosternal process spatulate, extending to about half-way between coxae but not level with them. *Mesosternum* rather deeply emarginate to receive prosternal process (Fig. 13, *c*). *Coxae* all transverse, fore and middle pairs narrowly separated, posterior contiguous.

Distinguishing Characters.—This genus seems to be quite close to the New Zealand *Veronatus*, but, *inter alia*, the pronotum is explanate and covers the head in repose, the mouth parts are very different, the maxillae, in at least some species of the New Zealand genus, having one lobe produced so as to appear like extra, hairy palpi. From *Heterocyphon* it differs in the wider penultimate joint of the labial palpi, the more oblique sides of the metasternum, more transverse posterior coxal plates and in the labrum.

PENEVERONATUS AUSTRALIS, n. sp. Fig. 13.

Types.—Holotype and paratype in the author's coll.

Type locality.—Acacia Plateau, N.S.W. (H. J. Davidson).

Elongate-ovate, rather depressed, moderately shining, fusco-rufous, head, basal and apical third of 4–11th joints of antennae, scutellum, margin of pronotum, tarsi, knees and epipleurae fusco-testaceous, the under side, to a variable extent, red, clothed with short depressed fine pubescence.

Head finely and rugosely punctate, with a depression behind each eye. *Pronotum* twice as wide as long, finely and closely punctate, disc somewhat uneven. *Scutellum* triangular, longer than wide, extremely minutely and closely punctate. *Elytra*: One and a half times as wide as prothorax, one and three-quarter times as long as wide, widest at apical third, with four costae traceable on each, of which the exterior one is only visible on the apical half and the two middle are quite distinct, very closely, more distinctly, but not much more coarsely punctate than pronotum.

Size: 7–6 × 3·5–3·1 mm.

Discussion.

Three specimens examined have a close superficial resemblance to *Heterocyphon australis* (Er.) with which it was at first confused.

It is intended to give a key to genera and a bibliography at the conclusion of these studies.

ACKNOWLEDGEMENTS.

Very grateful thanks are especially due to the authorities and entomologists of the British, Australian, National, South Australian, Queensland and Macleay Museums, the Victorian and Tasmanian Departments of Agriculture, the C.S.I.R.O., and to Messrs. F. E. Wilson, H. J. Davidson and E. C. Gourlay (New Zealand) for the loan of material and other help; to Messrs. Henry Dietrich of Cornell University, Walter Wittmer of Buenos Aires, V. Kalik of Czechoslovakia, and others for transcribing literature; and to Mrs. R. T. Backhouse for typing the MS.

A NEW SPECIES OF *AUSTROASCA* LOWER (CICADELLIDAE, HOMOPTERA).

By Harry F. Lower, Waite Agricultural Research Institute, The University of Adelaide.

(Eight Text-figures.)

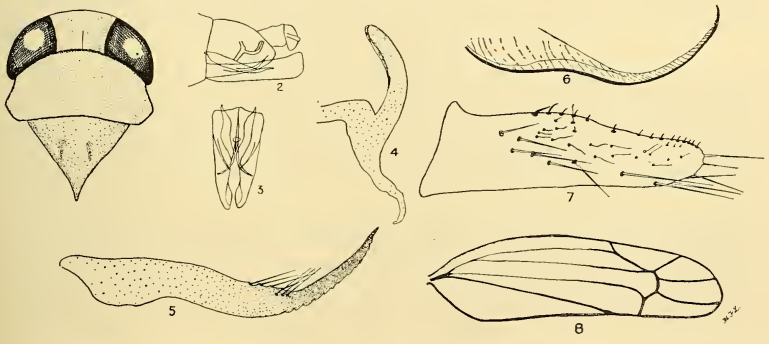
[Read 29th April, 1953.]

In an earlier paper (Lower, 1952), descriptions of every known species of *Austroasca* were given. Another species, since discovered, is here described as a further contribution to our knowledge of the genus.

Austroasca (Austroasca) infulata, n. sp.
(Text-figures 1–8.)

Length. Male 3·3 mm. *Colour* green.

Head. Crown (Text-fig. 1) very little produced; anterior and posterior margins parallel; CI = 18. Pale yellow-green with indefinite darker and lighter markings. *Face* typical, pale green. *Antennae* typical, dark green. *Eyes* brown.



Text-figures 1-8. *A. (A.) infulata*, sp. nov. 1, Crown, pronotum, and scutellum; 2, male genitalia (lateral view); 3, male genitalia (ventral view); 4, aedeagus; 5, harpagone; 6, brachone; 7, sub-genital plate; 8, tegmen.

Thorax. Pronotum: length slightly less than twice that of crown (5·3 : 3). Pale green; anteriorly, obscurely patterned with lighter shades of green; posteriorly, greenish-white and translucent. *Scutellum* light green with two small faint brown comma-shaped marks. *Legs* typical, bright green.

Wings. Tegmen (Text-fig. 8) pale green tending to brownish apically. Venation very similar to that of *A. merredinensis* Lower. *Hind wing* typical, colourless, veins greenish-white.

Abdomen. Dorsally, bright yellow, the anterior of each tergite marked transversely with black, more prominently so on the posterior tergites; ventrally, yellowish-green.

Genitalia. Green (Text-figs. 2 and 3). *Sub-genital plate* (Text-fig. 7) short and wide, its length less than three times its greatest width; thirteen to fourteen ensiform bristles in two groups, six about one-third from base, remainder more or less terminal; dorsal margin with setae; some thin scattered hairs centrally. *Harpagone* (Text-fig. 5) stout and long, terminating in a blunt spine; about thirteen unequal denticulations;

seven or so bristles in two series. *Brachone* (Text-fig. 6) in form of a long, ribbon-like band, its dorsal edge strengthened by a sclerotized "rib". Brachone widens basad until it merges imperceptibly with the pygophore. *Aedeagus* (Text-fig. 4) large, its free lobes gently curved dorsally.

Type.—Holotype male, pinned; genitalia and right tegmen mounted on slide. In Coll. Division of Entomology, C.S.I.R.O., Canberra, A.C.T.

Type locality.—Wild Horse Plains, South Australia, 28th August, 1951. Feeding and breeding on saltbush, *Atriplex nummularia* Lindl. (H. F. Lower).

Comments.—This is one of the species of the primitive *viridigrisea–merredinensis* sub-group, as is shown by the tegmen venation, the shape and chaetotaxy of the sub-genital plates, and the broad-based brachone with its simple curved tip. In my recent key (Lower, 1952) this species will trace out to section 4 (3). The characteristic shape of the brachone, however, will serve at once to distinguish it from the other two species of the sub-group.

Reference:

Lower, H. F., 1952.—A Revision of Australian Species Previously Referred to the Genus *Empoasca* (Cicadellidae, Homoptera). Proc. Linn. Soc. N.S.W., 76 (5-6) : 190-221.

FACTORS WORTH CONSIDERING WHEN MAKING MEASUREMENTS OF TROMBICULID LARVAE.

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(Three Text-figures.)

[Read 29th April, 1953.]

Synopsis.

The effects of the type and thickness of the mount, and of the degree of engorgement and the age of the larva, on measurements, body shape, and setae, are discussed, and certain standards for comparison are suggested.

Absolute measurements are useful in describing larval mites, but they have no value at all in differentiating species (by which I merely mean that over-all parallel differences in size do not indicate racial or specific differences, but only climatic and nutritional influences). However, in differentiating between some species, certain ratios between measurements of selected features can be most useful (as, for example, the ratio between length of scutum and width), and so it is important to know just how nearly accurate the basic measurements are, or can be.

1. Mounting Medium.

The type and age of the mount is the first factor to be considered. After several hours in gum-chloral the body becomes distended, and its over-all measurements are greatly increased. On the other hand, after some months in balsam the body shrinks slightly. It might therefore be laid down that critical body measurements should be made within an hour of mounting in gum-chloral, or within a week of mounting in balsam.

Distension of the body may cause some forward tilting of the scutum, especially in those species (cf. *Trombicula robusta* mihi, 1941) where the scutum is placed far forward on the anterior slope of the body. Distension or shrinking may alter the general impression of body-shape. And finally, distension spreads the body-setae, making them easier to place, while shrinking crowds them. Fortunately, the age and type of mount have no practical effect on the size of the hard appendages.

2. Thickness of Mount.

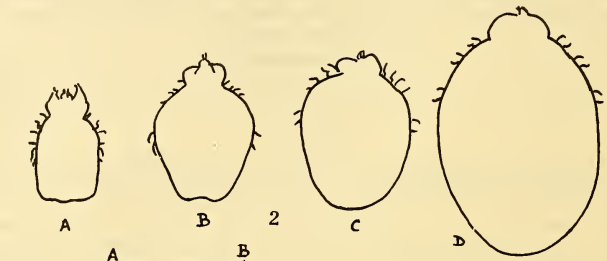
If the coverglass is pressed down too far the body usually bursts and its contents escape; its measurements and shape are thereby altered. Apart from this, the thickness of the mount can perhaps influence the apparent length of the sensillae. When a trombiculid larva is viewed from the side, it is seen that while the scutal and body setae lie fairly flat, more or less following the contours of the body, the sensillae are arched high up in a backward-sweeping curve. From this it is obvious that their function is to give warning when the larva is crawling into a shelving space, so that it does not go too far in and become trapped—a function analogous to that of a cat's whiskers, only in the vertical instead of the horizontal dimension. A thick mount may not disturb the sensillae, whereas in a thin one the coverglass may press them flat, thus altering their apparent length (see Text-fig. 1).

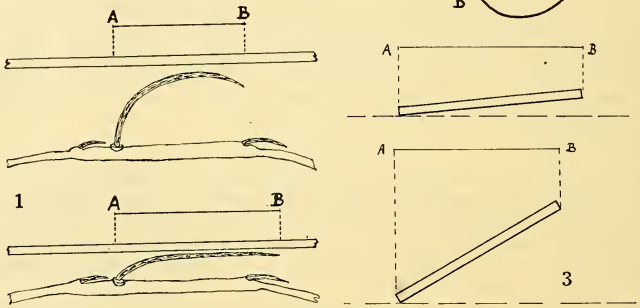
3. Degree of Engorgement.

This is the most important factor. Since trombiculid larvae feed only once—if forcibly detached before they have become fully engorged, their hypopharynx is torn off, and they do not re-attach themselves to the host, but just die; if fully engorged,

they disengage themselves and proceed to pupate—it can be assumed that specimens taken running free, as in boot collections, are newly hatched and unfed. But any taken attached to hosts must be regarded as having fed and grown, to an unascertainable degree.

Now many species have a characteristic shape when newly hatched, which alters as they become engorged (see Text-fig. 2). Consequently, a description of such a species should contain references to any change of shape due to engorgement.





Text-fig. 1.—Demonstrating the possible effect of a thin mount on the apparent length of the sensillae (A-B).

Text-fig. 2.—*Trombicula hirsti* Sambon, 1927: Body outlines: A, newly hatched; B, partly engorged; C, half grown; D, fully engorged.

Text-fig. 3.—Demonstrating how forward tilting of the scutum may affect the apparent longitudinal measurements (A-B).

Since the larva grows while feeding, it is not sufficient to measure the bodies of all specimens and average them—it has been my practice to group them, when enough specimens were available, into newly-hatched, half-grown, and fully-engorged, and to give averages for as many specimens in each group as I could secure; also to give the actual size of the largest specimen observed. I believe this method is preferable to simply quoting the measurements of the specimen selected as the type. From Table 1 it will be seen that the actual measurements of any one individual, or a general average alone, would give no true picture at all of the size of the larva.

TABLE 1.

Body measurements (in microns) of Trombicula hirsti *Sambon, taken at Bulolo in* 1939 *(averages of* 10 *observations in each group).*

	Length.	Greatest Width.
Relatively unengorged	176	147
Partly engorged	268	206
Fully engorged	450	364
Largest seen	480	390
Average of all observations	298	239